The volume has been used as a text-book in the United States, but we do not think that there is any danger of its displacing British text-books in our own colleges. An appendix contains some exercises to be worked by the student, and there are others interpolated in the text and not always easy to find.

Handbook for Rangers and Woodsmen. By J. L. B. Taylor. Pp. ix + 420. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1917.) Price 11*s.* 6*d.* net.

This is a handbook of pocket size, primarily intended as a vade-mecum on all subjects that may turn up in the course of the multifarious activities of the forest ranger or woodsman in the United States. It contains much information that is only indirectly connected with forestry, and will be useful to travellers and settlers generally in the wilder parts of North America.

The first part, entitled "Equipment," deals with clothing, harness, and provisions. The next part is a guide to the construction of telephone lines, paths, roads, bridges, buildings, and fences, and treats, in addition, of blasting, concrete work, painting, and carpentry. The part called "General Field Work" begins with riding, pack animals, and waggons, and concludes with useful notes on felling timber, fighting forest fires, land-surveying, and field cooking. The next part is concerned with the care of horses, cattle, sheep, and swine, and gives an interesting description of the various methods of identification of stock by branding, ear-marks, etc., and of the curious dodges resorted to by cattle-thieves. Another part deals mainly with human ailments and injuries, reptiles, camp sites, and finding one's way. It is here stated that two species of ant in Arizona and New Mexico throw up mounds, and in nearly every instance leave an opening at the south-east side, presumably in order that the morning sun may warm the runway sooner.

The appendix contains many useful lists and tables, and concludes with a glossary of peculiar words in use in the Far West. The book is clearly printed on strong thin paper, and is illustrated with 243 appropriate figures and diagrams.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* Nature. *No notice is taken of anonymous communications.*]

The Audibility of Distant Gunfire.

The sound of gunfire from northern France might be expected to be audible in Cambridge, for on the occasion of Queen Victoria's funeral the firing at Portsmouth was clearly heard in this neighbourhood, and even further north, near Peterborough, and the distance from the battlefield is not much greater than that from Portsmouth. But I did not become aware of the sound until one day early in May last, when several volleys of guns were audible about midday. The sound was unmistakable for me, as I had heard the Queen Victoria funeral guns at a distance of sixty miles (in Surrey), and thus recognised the phenomenon at once. These particular volleys may have come from a little skirmish at sea, or even from gun practice at Shoeburyness, for I heard no more for several days. However, they led me to listen carefully, and on the very still nights at the end of May I began to hear the gunfire from the battlefield. It was audible only on the south-east side of my house, and there chiefly in a re-entrant angle of the walls.

I soon found (at the beginning of June) that the sound was astonishingly intensified in a garden latrine, which acted as a resonator like Mr. Carus-Wilson's garage (Nature, September 6, p. 6), although it is but a tiny building, and differs in being built of brick and having a slate roof. Here the explosions were nearly as loud and frequent as I afterwards heard them in Kent. I compared the intensity of the sounds as heard at different windows of my house, and found it greatest at the basement, but only on the south-east side of the house. I could not detect the sounds in a north-east basement room, so apparently the vibrations did not come through the earth. During June and July the explosions became ever more audible, until about July 29 they were evident even indoors at midday, above the murmur of distant traffic. Since the middle of August they have become less distinct and fewer, and now I can hear either none, or perhaps a few faint booms now and then. The sounds have been heard by other persons in and around Cambridge, especially in the villages, and I am informed that they have been detected so far north as Downham Market, in Norfolk.

In July I spent a few days in Kent, visiting in quick succession Rochester, Maidstone, Ashford, Lydd, Tenterden, and Tunbridge Wells. I was unable to detect the sounds at Lydd. They were faint at Ashford and Tenterden, clear at Maidstone, more so at Rochester; and especially distinct at Tunbridge Wells, where they were audible through all street traffic. The spot where the sounds were most intense was the rocky combe at Rusthall, where the hollow, bounded by more or less perpendicular escarpments of rock, acted as a potent resonator.

It is notable that Lydd is on the plain near the sea, Maidstone, Ashford, and Tenterden on the undulating Weald, and Rochester on a north-west slope of the Downs; also that the Tunbridge Wells valley descends to the west, and the Rusthall valley to the north-west. Thus in those places where the sounds were most distinct the vibrations had travelled over high ground and arrived in a descending direction. There was no doubt as to the direction whence the sounds came. Wherever the sounds were audible on open ground, in Kent or in Cambridgeshire, one could discern that they came from the south-eastern horizon, and through the air.

F. J. Allen.

Cambridge, September 15.

Unusual Rainbows.

With reference to my letter in Nature of August 30 on the subject of "An Unusual Rainbow," and to the replies which were given on September 6, I should like to mention that the sun's altitude and the angle at which the primary bow met the reflected bow were only rough estimations. At the time when the phenomenon was visible I had unfortunately no instruments at hand. Since then I have calculated the altitude of the sun from a knowledge of the ship's position and the sun's declination and hour angle, and have found it to be about 8° 5′. This gives the angle of intersection of the bows as 24¼° approximately, which is more in agreement with my estimation. The surface

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of the sea was remarkably calm at the time, and this no doubt accounts for the brilliancy of the bows, which are due to the reflected image of the sun.

I wish to thank the readers of NATURE who have given explanations of the phenomenon, and to say that these explanations have been much appreciated by my brother officers and myself. ALLAN J. LOW.

September 10.

The Convolvulus Hawk-Moth.

AN unusual number of the convolvulus hawk-moth has been noticed in this neighbourhood during the last month, and I venture to ask if a similar occurrence has come to light in other localities. The record, which is by no means exhaustive, extends chiefly some thirty miles along the coast, though some specimens have been captured twenty miles inland. It would be of interest to know whether this is an immigration from overseas or whether any of your entomological readers can advance a reason for their appearance.

C. E. ROBSON.

Hancock Museum, Barras Bridge,
Newcastle-upon-Tyne, September 14.

EXAMINATIONS IN SECONDARY SCHOOLS.

THE valuable Report published in 1911 of the Consultative Committee, of which the Right Hon. A. H. D. Acland was chairman, appointed by the Board of Education to consider the subject of examinations in secondary schools has borne tentative fruit in a series of regulations set forth in a circular of the Board, No. 996, dated May 25. This has now been given practical effect in the appointment of a Secondary-School Examinations Council, with the Rev. Wm. Temple, formerly headmaster of Repton School, as chairman (see p. 58). The council is comprised of representatives of the universities, of the Teachers' Registration Council, of the Association of Education Committees, of the various examination boards, and of the County Councils and Municipal Corporations Associations, but it contains no names *directly* representative of either boys' or girls' secondary schools, or of the Associations of Headmasters and Headmistresses concerned with them, or that of a single headmaster. This fact tends to deprive the Examinations Council of much weight, and of that direct personal association with the problems of secondary-school life which the occasion demands; and it would have been desirable also to include, especially in the present changed outlook and temper of employers, representatives of the great industrial organisations of the country. For some unexplained reasons the provision for nomination by a standing committee of professional bodies has been withdrawn after consultation with them.

It may be remembered that the report of the Consultative Committee reviewed in detail the origin and development of the multiplicity of external examinations of which the secondary schools in England are the subject, including the examinations of such bodies as the College of Preceptors, the Oxford Delegacy, the Cambridge Syndicate, the Public Services, the London and Provincial Universities, and the numerous professions which demand special entrance examinations. It discussed the evil effects of all these diverse examinations on the work and *moral* of the secondary schools, preventing them from realising their true purpose, and instituting aims other than those of the efficient education and training of their pupils. It showed how, for example, the universities and the professions are to some extent defeating their own ends by their demands upon the schools and by their conflicting requirements, reducing the time available for methodical instruction and training, and leading to too early technical training, which lowers the value of the finished product of the school as a whole. Striking figures were given showing the number of pupils who passed to the universities from 371 secondary schools the subject of full inspection by the Board during the school years 1907-8 and 1908-9. Out of 14,789 pupils who left these schools during those two years, only 400 went to the universities, or 2·7 per cent.

A full consideration of all aspects of the question led the committee to the conclusion that, whilst external examinations were necessary and desirable in secondary schools, they must be brought under better regulations, reduced very largely in number, and intimately connected with a well-considered and adaptable scheme of inspection, so as to ensure a sound basis of liberal education free from specialisation. The report suggested that an examination should be instituted for the award of a secondary-school certificate, with due regard to the pupil's school record, open to candidates who have reached a class the average age of which is sixteen, and who have been in attendance at a secondary school for at least three years, and that the only other external examination should be one suitable to the attainments, general and special, of pupils of an average age of eighteen or nineteen in respect of whom a secondary-school higher certificate would be awarded.

These examinations, closely linked with inspection, it was suggested, should be organised by the Board of Education acting through an Examinations Council, which would include representatives of the universities, the professions, the local authorities, the teachers in different types of schools, and other persons with practical experience of industrial and commercial life, as well as of the official experience of the Board itself. It should be entrusted with the necessary powers to carry out the main principles laid down in the report.

In the concluding sentence of the report reference was made to the fact that seven years previously to its issue in 1911, namely, in 1904, this subject of the examinations in secondary schools had been referred to a like Consultative Committee and recommendations made, the main proposals of which were never embodied in practical action, and the committee plaintively urged that it could not contemplate the recurrence of such an unsatisfactory state of things, and

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